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THE HECKER LAW GROUP
1925 CENTURY PARK EAST
SUITE 2300
LOS ANGELES, CA 90067

EXAMINER	
AKLILU, KIRUBEL	
ART UNIT	**PAPER NUMBER**
2617	

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/877,984	COLE ET AL.	
	Examiner	Art Unit	
	Kirubel Aklilu	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14* is/are allowed.

6)☒ Claim(s) *1-7,9-13,15-21,23 and 24* is/are rejected.

7)☒ Claim(s) *8 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 June 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/2/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

- Figure 1-6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

- The drawings are objected to because Figure 7 unit 709 has the arrow pointing towards unit 708 TPR Receiver. The examiner believes the Unit 709 should be represented as coming out of unit 708 and not coming in (with an arrow pointing away from unit 708). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as

"amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1-4, 9-13, 15-18, and 23** are rejected under 35 U.S.C. 102(b) as being anticipated by Goolcharan (U.S. Patent # 5,283,637).

1. As for **Claim 1**, Goolcharan teach a method for equalizing video transmitted over twisted pair cable comprising:

receiving an input video signal having a plurality of components (see col. 6 lines 33-35 "At each of the stations 12 and 14 of the telecommunication system 10 there is a video signal source, indicated diagrammatically as a video camera 18 and also a video receiver indicated diagrammatically as a television receiver or monitor 20." See also col. 4 lines 31-35 "Thus, a video signal conforming to the Federal Communication Commission television channel requirements for monochrome and color television transmission may be transmitted according to the invention." The colors of the video signal are interpreted to be plurality of components of said video signal);

generating a first plurality of compensated components by applying at least one compensation to each of said plurality of components of said video signal (see col. 10 lines 3-9 "The modulating circuit 24 also employs a separate amplifier circuit 52 for each of the video, telephone and data signals. The input to the amplifier circuit 52 appears on line 112 and is passed through a capacitor 114. In the circuitry for amplifying the video signal the capacitor 114 is a 0.1 microfarad capacitor, while in the circuitry for amplifying the voice and data signals the value of the capacitor 114 is 0.22 microfarads." The amplifier circuit 52 is interpreted to apply compensation to the plurality of components of the video signal. When the amplifier circuit amplifies the video signal, it inherently is also amplifying the color components that are present in the video signal. Therefore, it is interpreted that the amplifying circuit compensates for each of the components (color components) of the video signal.)

transmitting each of said first plurality of compensated components over a twisted pair cable to a receiving station, said first plurality of compensated components being transmitted over a plurality of twisted pair cables (see col. 7 lines 15-20 "As illustrated in FIGS. 1-4, the stations 12 and 14 of the telecommunication system 10 are comprised of not only circuitry for transmitting and receiving a video signal over a twisted pair link 16, but are each further comprised of additional signal sources for providing additional telecommunication signals." It is interpreted that the first plurality of compensated components outputted from the modulating circuit are transmitted from one of the stations (the transmitter) to the second station (the receiver), over a plurality of twisted pair cables);

generating a second plurality of compensated components from said first plurality of compensated components by applying inverse compensation to compensate for accumulated losses in each of said first plurality of compensated components due to transmission over said twisted pair cable (see col. 7 lines 3-10 "The correcting amplifier circuit 32 is coupled to the symmetrical video transformer circuit 30 to provide an offsetting impedance to the broadband signal. This offsetting impedance is proportional and in opposition to the known impedance of the twisted pair link 16. The offsetting impedance thereby negates the effect of the known impedance of the twisted pair 16 on the broadband signal that passes over the twisted pair 16." The correcting amplifier circuit of the receiving station receives the first plurality of compensated components that was amplified by the amplifier circuit 52 of the transmitting station and performs

inverse compensation to compensate for the accumulated losses due to transmission loss over the twisted pair 16);

generating a third plurality of compensated components by applying, to each of said second plurality of compensated components, a desired phase skew such that all of said third plurality of compensated components are in phase (see col. 16 line 68 – col. 17 line 3 "The correcting amplifier circuit portion 260 performs the phase adjustment necessary to complete the correction for the impedance of the twisted pair link 16.");

outputting said third plurality of compensated components on an output device (see col. 17 lines 49-51 "The correcting amplifier circuitry reconstructs all of the signals, including the video signal 55. That signal is fully reconstructed and complete with horizontal sync pulses and color information in the video signal 55." It is interpreted this fully reconstructed video signal is output on a display device).

2. As for **Claim 15**, Goolcharan teach an apparatus for equalizing video transmitted over twisted pair cable comprising:

a transmitter receiving an input video signal having a plurality of components (see col. 6 lines 33-35 "At each of the stations 12 and 14 of the telecommunication system 10 there is a video signal source, indicated diagrammatically as a video camera 18 and also a video receiver indicated diagrammatically as a television receiver or monitor 20." See also col. 4 lines 31-35 "Thus, a video signal conforming to the Federal Communication Commission television channel requirements for monochrome and color television transmission may be transmitted according to the invention." The colors

of the video signal are interpreted to be plurality of components of said video signal. Stations 1 and 2 are transmitters receiving an input video signal having a plurality of components);

a first compensation network in said transmitter generating a first plurality of compensated components by applying at least one compensation to each of said plurality of components of said video signal (see col. 10 lines 3-9 "The modulating circuit 24 also employs a separate amplifier circuit 52 for each of the video, telephone and data signals. The input to the amplifier circuit 52 appears on line 112 and is passed through a capacitor 114. In the circuitry for amplifying the video signal the capacitor 114 is a 0.1 microfarad capacitor, while in the circuitry for amplifying the voice and data signals the value of the capacitor 114 is 0.22 microfarads." The amplifier circuit 52 is interpreted to be a compensation network to apply compensation to the plurality of components of the video signal. When the amplifier circuit amplifies the video signal, it inherently is also amplifying the color components that are present in the video signal. Therefore, it is interpreted that the amplifying circuit compensates for each of the components (color components) of the video signal.);

a plurality of twisted pair cables for transmitting said first plurality of compensated components, wherein each of said first plurality of compensated components is transmitted over a twisted pair cable of said plurality of twisted pair cables to a receiving station (see fig. 1 unit 16 is a plurality of twisted pair cables for transmitting said first plurality of compensated components);

a second compensation network in said receiving station for generating a second plurality of compensated components from said first plurality of compensated components by applying inverse compensation to compensate for accumulated losses in each of said first plurality of compensated components due to transmission over said twisted pair cable (see col. 7 lines 3-10 "The correcting amplifier circuit 32 is coupled to the symmetrical video transformer circuit 30 to provide an offsetting impedance to the broadband signal. This offsetting impedance is proportional and in opposition to the known impedance of the twisted pair link 16. The offsetting impedance thereby negates the effect of the known impedance of the twisted pair 16 on the broadband signal that passes over the twisted pair 16." The correcting amplifier circuit of the receiving station is interpreted to be a second compensation network that receives the first plurality of compensated components that was amplified by the amplifier circuit 52 of the transmitting station and performs inverse compensation to compensate for the accumulated losses due to transmission loss of transmission over the twisted pair 16);

a phase delay network in said receiving station for generating a third plurality of compensated components by applying, to each of said second plurality of compensated components, a desired phase skew such that all of said third plurality of compensated components are in phase (see col. 16 line 68 – col. 17 line 3 "The correcting amplifier circuit portion 260 performs the phase adjustment necessary to complete the correction for the impedance of the twisted pair link 16." The correcting amplifier circuit portion that performs the phase adjustment is interpreted to be a phase delay network);

an output device for outputting said third plurality of compensated components (see fig. 1 unit 20 Television monitor is interpreted to be an output device for outputting said third plurality of compensated components. See col. 6 lines 33-37 "At each of the stations 12 and 14 of the telecommunication system 10 there is a video signal source, indicated diagrammatically as a video camera 18 and also a video receiver indicated diagrammatically as **a television receiver or monitor 20**.").

3. As for **Claims 2 and 16**, Goolcharan teach said plurality of components comprises a color system's color components (See col. 4 lines 31-35 "Thus, a video signal conforming to the Federal Communication Commission television channel requirements for monochrome and color television transmission may be transmitted according to the invention." The colors of the video signal are interpreted to be plurality of components of said video signal).

4. As for **Claims 3 and 17**, Goolcharan teach each of said plurality of components comprises a high frequency portion and a low frequency portion (see col. 4 lines 57-63 "By providing the line driver means with selected resistor-capacitor combinations, the system can be adjusted so that the video signal is degraded more uniformly across its bandwidth as it is transmitted through the twisted pair of telephone wires, and is not excessively degraded at the **upper and lower ends of the video signal frequency**

band." The upper and lower ends of the video signal frequency band are interpreted to be high frequency and low frequency portions).

5. As for **Claims 4 and 18**, Goolcharan teach said at least one compensation comprises boosting of said high frequency portion such that said high frequency portion of each of said plurality of components is received at said receiving station (see col. 10 lines 3-9 "The modulating circuit 24 also employs a separate amplifier circuit 52 for each of the video, telephone and data signals. The input to the amplifier circuit 52 appears on line 112 and is passed through a capacitor 114. In the circuitry for amplifying the video signal the capacitor 114 is a 0.1 microfarad capacitor, while in the circuitry for amplifying the voice and data signals the value of the capacitor 114 is 0.22 microfarads." Amplifying the video signal is interpreted to be boosting said video signal components, which includes the high frequency portions of the video signal components as well. It is also interpreted that these high frequency components are amplified or boosted such that the high frequency portions are received at the receiving station. The color components of the video signal are interpreted to be carried on the high frequency portion of the video signal. See col. 2 lines 54-58 "Since color information is transmitted at the upper end of the frequency band of a video signal, color quickly becomes lost in transmission of a video signal over links including conventional twisted pairs of telephone wires.")

6. As for **Claims 9 and 23**, Goolcharan teach said inverse compensation is adjustable. See col. 7 lines 3-10 "The correcting amplifier circuit 32 is coupled to the symmetrical video transformer circuit 30 to provide an offsetting impedance to the broadband signal. This offsetting impedance is proportional and in opposition to the known impedance of the twisted pair link 16. The offsetting impedance thereby negates the effect of the known impedance of the twisted pair 16 on the broadband signal that passes over the twisted pair 16." Since the offset impedance is proportional to the impedance of the twisted pair link 16, it is interpreted that the offset impedance is adjustable in relation to a change in the impedance of the twisted pair 16.

7. As for **Claim 10**, Goolcharan teach said first plurality of compensated components is generated in a transmitting station. See col. 19 lines 18-20 "As illustrated in FIG. 1, the system can be constructed for full duplex operation. In such a system each of the stations 12 and 14 includes full transmit and receive capabilities." As both stations 12 and 14 include full transmit and receive capabilities, both stations 12 and 14 are interpreted to be both a transmitting station and a receiving station. Therefore, it is interpreted that first plurality of compensated components is generated in a transmitting station.

8. As for **Claim 11**, Goolcharan teach said second plurality of compensated components is generated in said receiving station. See col. 19 lines 18-20 "As illustrated in FIG. 1, the system can be constructed for full duplex operation. In such a system

each of the stations 12 and 14 includes full transmit and receive capabilities." As both stations 12 and 14 include full transmit and receive capabilities, both stations 12 and 14 are interpreted to be both a transmitting station and a receiving station. Therefore, it is interpreted that said second plurality of compensated components is generated in said receiving station.

9. As for **Claim 12**, Goolcharan teach said first plurality of compensated components and said second plurality of compensated components are generated in said receiving station. See col. 19 lines 18-20 "As illustrated in FIG. 1, the system can be constructed for full duplex operation. In such a system each of the stations 12 and 14 includes full transmit and receive capabilities." As both stations 12 and 14 include full transmit and receive capabilities, both stations 12 and 14 are interpreted to be both a transmitting station and a receiving station. Therefore, it is interpreted that said first plurality of compensated components and said second plurality of compensated components are generated in said receiving station.

10. As for **Claim 13**, Goolcharan teach said first plurality of compensated components and said second plurality of compensated components are generated in a transmitting station. See col. 19 lines 18-20 "As illustrated in FIG. 1, the system can be constructed for full duplex operation. In such a system each of the stations 12 and 14 includes full transmit and receive capabilities." As both stations 12 and 14 include full transmit and receive capabilities, both stations 12 and 14 are interpreted to be both a transmitting

station and a receiving station. Therefore, it is interpreted that said first plurality of compensated components and said second plurality of compensated components are generated in a transmitting station.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **5-6, and 19-20**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Goolcharan (U.S. Patent # 5,283,637) in view of Seidel (U.S. Patent # 4,273,963).

11. As for **Claims 5 and 19**, Goolcharan does not expressly teach said inverse compensation comprises:

low frequency shaping to account for diffusion effect losses occurring during transmission over said twisted pair cable; and

high frequency shaping to account for skin effect losses occurring during transmission over said twisted pair cable.

However, in the same field of endeavor, Seidel teaches an automatic equalization for digital transmission systems wherein a variable frequency-shaped gain is applied in the upper frequency range to compensate for skin effect loss and at the lower frequency

range to compensate for attenuations caused by physical components such as the series resistance and shunt capacitance line parameters (see col. 2 lines 21-25 "In order to compensate for the overall line attenuation for various lengths of line, a gain versus frequency characteristic is synthesized which provides properly shaped compensation for all frequencies, line lengths and gauges."). Diffusion effect losses are inherent losses that are present in real physical components, including twisted pair transmission lines. See Seidel col. 2 lines 5-25 "equalization for variable lengths of telephone cable is accomplished with a circuit which provides frequency-shaped gain having three regions of gain variation. In the low frequency range, the logarithm of gain increases as the square root of frequency. In the midrange, the gain changes more slowly with frequency. In the upper frequency range, the logarithm of gain again varies as the square root of frequency. **Attenuation at low frequencies (0-10 kHz) is caused by the series resistance and shunt capacitance line parameters. In the upper frequency range (100 kHz-10 MHz), the skin effect predominates** and again attenuation is related to the square root of frequency. In the midrange (10-100 kHz), the attenuation of the line is in a lower sensitivity transition region. In order to compensate for the overall line attenuation for various lengths of line, **a gain versus frequency characteristic is synthesized which provides properly shaped compensation for all frequencies**, line lengths and gauges." In light of the teaching of Seidel, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the teaching of Goolcharan to have a low frequency shaping to account for diffusion effect losses and high frequency shaping to account for skin effect

losses occurring during transmission over said twisted pair. One of ordinary skill in the art at the time the invention was made would have been motivated to do this in order to achieve a better signal quality by reducing the high frequency distortion present as a result of skin effect that is present in twisted pair transmission lines (see Seidel col. 1 lines 20-24 "Due to the frequency-dependent nature of the twisted pair, it is necessary to provide equalization for the frequency distortion which takes place in the transmission cable.")

12. As for **Claims 6 and 20**, the modified Goolcharan in view of Seidel teaches said high frequency shaping comprises applying a compensation network that effectively compensates for said skin effect losses. See col. 2 lines 26-48 "More particularly, the equalizer comprises a variable gain amplifier which is used to differentially combine two admittance functions, both having significant variations with frequency, and to vary the proportion between this difference and a constant, frequency-insensitive admittance function . . . the combination of these two frequency-sensitive admittance functions with the constant admittance function provides an overall gain characteristic which closely compensates for the attenuation of a telephone cable pair of any gauge or length." The combination of the two frequency-sensitive admittances is interpreted to be the compensation networks that effectively compensate for said skin losses.

Claims **7, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Goolcharan (U.S. Patent # 5,283,637) in view of Non-Patent Literature ***Shielded***

or Unshielded Twisted-Pair for High Speed Data Transmission? 1998 IEEE, by Knobloch et al.

13. As for **Claim 7 and 21**, Goolcharan does not expressly teach said twisted pair cable is unshielded twisted pair. However, Knobloch et al. in "Shielded or Unshielded Twisted-Pair for High Speed Data Transmission?" teach that attenuation of signal transmitted over a shielded twisted pair is higher than the attenuation experienced by a signal transmitted over an unshielded twisted pair. See Knobloch et al. page 1 lines 27-29 "Attenuation and reflection on transmission lines are the determining factors limiting the transmission distance. Both, attenuation and reflection, are affected by shielding." And page 2 lines 3-5 "So we can state that the resulting attenuation in the shielded case is higher than the resulting attenuation in the unshielded case". In light of the teaching of Knobloch et al., it would have been obvious to one with ordinary skill in the art to have modified the teaching of Goolcharan to have the twisted pair cables be unshielded in order to reduce the attenuation the signal suffers during transmission.

Claim **24** is rejected under 35 U.S.C. 103(a) as being unpatentable over Goolcharan (U.S. Patent # 5,283,637).

14. As for **Claim 24**, Goolcharan does not expressly teach said color system is RGB. However, Official Notice (MPEP § 2144.03) is taken the both the concepts and advantages of using RGB color system are well known and expected in the art. At the

time the invention was made, it would have been obvious to one with ordinary skill in the art to have used an RGB color system to represent the color video signals because the RGB color system is the oldest and most widely used color system for transmitting color video signals. Using a widely accepted standard such as the RGB color system greatly aids in wide system portability.

Allowable Subject Matter

15. **Claim 14** is allowed.

16. Claims 8 and **22** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: As to claims 8 and 22, the prior art does not teach or fairly suggest a method of Claim 1 and an apparatus of Claim 15 respectively, wherein said phase skew is applied using a non-minimum phase zero filter, said non-minimum phase zero filter having a pole and zero that are equivalent, said pole and zero being adjustable to achieve said desired phase skew.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirubel Aklilu whose telephone number is 571-272-7342. The examiner can normally be reached on 9:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Kelly can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KA

8/3/05

CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600